Apologetics

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[Evangelists Need Apologetics, and Apologists Need Philosophy](http://deadphilosopherssociety.com/evangelists-need-apologetics-and-apologists-need-philosophy-5292/)

 October 27, 2014 /  [Matthew Bauer](http://deadphilosopherssociety.com/author/mbauer/" \o "Posts by Matthew Bauer)

As Catholics, we have a necessary commitment to spread the Word of God and make disciples of all the nations, lest we forget the Great Commission. An evangelist, deriving from the Greek (transliterated) *eu* meaning good and *angelia* meaning message, is literally someone who spreads the good message of the Gospel.

What makes a good evangelist though? I would argue the best evangelists are the best apologists. In the Greek, *apologia*, means to give a reasoned defense was the legal defense, complete with evidence that would support one’s position. Consider for a moment that the Devil in the Greek is *diabolos*, which means slanderer or accuser. When we become **apologists, we see this as a defense against our accuser, the devil, and as a reasoned defense goes, we must be able to articulate not only what we believe, but why we believe it.**

Today, apologists are needed more than ever to defend the Faith. So what makes a good reasoned defense of the Faith? Well, certainly an understanding of Sacred Scripture, as well as knowledge of the Church Fathers, but also a good grasp of philosophy should be in the apologist’s arsenal. On the Dead Philosophers Society logo you see the words Faith and Reason, *Fides et Ratio*, and the Church understands these two principles to be mutually beneficial and complimentary. The movement in secular society to hold faith and reason in opposition to one another is a byproduct of modern man’s inability to synthesize principles which differ in approach.

Philosophy, which literally means “love of wisdom,” differs in its approach to fundamental questions from that of Theology as a discipline. Philosophy assumes no direct revelation from God, while Theology, presupposing not only God’s existence, but also that knowledge can come through revelation would answer the same questions in a very different way. One might look for a theological answer to, “Does God exist”, and find that the lives of those who have had revelatory experiences are valid, or that the Bible, as the inspired Word of God tells us that God exists is perfectly valid. Philosophy, approaching the question without such assumptions, would look to answer the question by means of human reason.

Given this distinction, some might ask how philosophy can answer the questions which theology grapples with then, such as an explanation of the Trinity, or the Incarnation. The short answer is that it cannot. How often is it that we find ourselves fighting over doctrinal issues in the current spiritual war though? I find myself debating with far more atheists than I do Gnostics, and as such appeal to arguments from Aristotle more often than I quote Scripture. I’m not trying to downplay the importance of theology, nor Scripture, but as a starting point, in the current culture war, appealing to the Word of God to prove God’s existence seems like a moot point.

Philosophy, for those who have not studied it formally can seem daunting. Scratch that – It *is* daunting. Philosophy has gone places neither wise nor loving. I don’t think that reading Heidegger is going to give you a better grasp on defending theism, but Aristotle might. One of the critiques of Christianity that I run into constantly with atheists, is that it doesn’t appeal to reason. Most of the atheists that I’ve met have prided themselves on being ‘intellectuals’, not persuaded by ‘sentimentalism’ that affects believers. Subsequently, it is important that we meet them on their own ground, leveling the playing field, this way we are able to make assertions that are not dismissed before being uttered.

**Apologetics, a reasoned defense of the faith must not just be a reasoned defense of the doctrines of faith but also of faith in God itself**. Through the study of philosophy we not only become better apologists, but also become more sure-footed in our own faith. For those unsure of where to start, here are just a few summaries of different important philosophical proofs for the existence of God. After reading through these, if you are still interested and want to deepen your understanding of philosophy in the context of religion I would recommend the excellent book by Dr. Mortimer J. Adler, [*How to Think About God: A Guide for the 20th Century Pagan*](http://www.amazon.com/dp/0020160224/ref=rdr_ext_tmb).

## Aristotle: the Prime Mover

<http://www.scandalon.co.uk/philosophy/aristotle_prime_mover.htm>

Aristotle believed that all movement depends on there being a mover. For Aristotle, movement meant more than something travelling from A to B. Movement also included change, growth, melting, cooling, heating…etc.

Just like his predecessor Heraclitus, Aristotle recognised that everything in the world is in a state of flux.

Aristotle argued that behind every movement there must be a chain of events that brought about the movement that we see taking place.

Aristotle argued that this chain of events must lead back to something which moves but is itself unmoved. **This is referred to as the Prime Mover.**

In Aristotle’s view change is eternal. There cannot have been a first change, because something would have to have happened just before that change which set it off, and this itself would have been a change, and so on.

In his book Metaphysics (literally after physics), Aristotle calls this source of all movement the Prime Mover. The Prime Mover to Aristotle is the first of all substances, the necessary first sources of movement which is itself unmoved. **It is a being with everlasting life, and in Metaphysics Aristotle also calls this being ‘God’.**

The Prime Mover causes the movement of other things, not as an efficient cause, but as a final cause. In other words, it does not start off the movement by giving it some kind of push, but it is the purpose, or end, or the teleology, of the movement. This is important for Aristotle, because he thought that an effective cause, giving a push, would be affected itself by the act of pushing. Aristotle believed the prime mover causes things to move by attraction in much the same way that a saucer of milk attracts a cat. The milk attracts the cat but cannot be said to be changed in the process!

Isaac Newton came to the same conclusion in his Third Law of Motion, when he said that ‘action and reaction are equal and opposite’. Aristotle was keen to establish that **the Prime Mover is itself Unmoved, or unaffected, otherwise the whole concept would break down.** The Final Cause causes movement as the object of desire and love. If God did give things an initial push then he himself would be changed. Instead God draws things to himself and remains unaffected. The stars and the planets move out of a spiritual desire to imitate God. They do this by moving in eternal circles.

Aristotle believed that God exists necessarily, which means that God does not depend on anything else for existence. He never changes or has any potential to change, never begins and never ends, and so is eternal. Eternal things, Aristotle claimed, must be good; there can be no defect in something that exists necessarily, because badness is connected with some kind of lack, a not-being of something which ought to be there, an absence of the ‘actuality’ that Aristotle thought God most perfectly has.

Aristotle argued that the Prime Mover had to be immaterial. It could not be made of any kind of stuff, because matter is capable of being acted upon, it has potential to change. Since it is immaterial, it cannot perform any kind of physical, bodily action. Therefore, Aristotle thought, the activity of the Prime Mover, God, must be purely spiritual and intellectual. The activity of God is thought.

But what does God think about it? God could not think about anything which caused him to change in any way; nothing which could affect him, or react, or even change him from not-knowing to knowing. Aristotle concludes that God thinks about himself only. **Nothing else is a fit subject**. He even defines God as ‘thought of thought’, or ‘thinking about thinking’. At the end of this line of argument, Aristotle comes to the conclusion that God knows only himself; so he does not know this physical world that we inhabit, he does not have a plan for us, and he is not affected by us.

Aristotle’s concept of the Prime Mover found its way into the medieval theology of Thomas Aquinas and his cosmological proof for the existence of God. Likewise, Aristotle’s teleological arguments found their way into Aquinas’ Natural Law.

<http://web.mnstate.edu/gracyk/courses/web%20publishing/aquinasfiveways_argumentanalysis.htm>

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| **St. Thomas Aquinas:  The Existence of God can be proved in five ways.** |
| Argument Analysis of [the Five Ways](http://web.mnstate.edu/gracyk/courses/web%20publishing/aquinasFiveWays.htm)         © 2004 [Theodore Gracyk](http://web.mnstate.edu/gracyk/) | |
| The First Way: Argument from Motion   1. Our senses prove that some things are in motion. 2. Things move when potential motion becomes actual motion. 3. Only an actual motion can convert a potential motion into an actual motion. 4. Nothing can be at once in both actuality and potentiality in the same respect (i.e., if both actual and potential, it is actual in one respect and potential in another). 5. Therefore nothing can move itself. 6. Therefore each thing in motion is moved by something else. 7. The sequence of motion **cannot extend *ad infinitum*.** 8. Therefore it is necessary to arrive at a first mover, put in motion by no other; and this everyone understands to be God.   The Second Way: Argument from Efficient Causes   1. We perceive a series of efficient causes of things in the world. 2. Nothing exists prior to itself. 3. Therefore nothing is the efficient cause of itself. 4. If a previous efficient cause does not exist, neither does the thing that results. 5. Therefore if the first thing in a series does not exist, nothing in the series exists. 6. The series of efficient causes **cannot extend *ad infinitum* into the past,** for then there would be no things existing now. 7. Therefore it is necessary to admit a first efficient cause, to which everyone gives the name of God.   The Third Way: Argument from Possibility and Necessity (Reductio argument)   1. We find in nature things that are possible to be and not to be, that come into being and go out of being i.e., contingent beings. 2. Assume that every being is a contingent being. 3. For each contingent being, there is a time it does not exist. 4. Therefore it is impossible for these always to exist. 5. Therefore there could have been a time when no things existed. 6. Therefore at that time there would have been nothing to bring the currently existing contingent beings into existence. 7. Therefore, nothing would be in existence now. 8. We have reached an absurd result from assuming that every being is a contingent being. 9. Therefore not every being is a contingent being. 10. Therefore some being exists of its own necessity, and does not receive its existence from another being, but rather causes them. This all men speak of as God.   The Fourth Way: Argument from Gradation of Being   1. There is a gradation to be found in things: some are better or worse than others. 2. Predications of degree require reference to the “uttermost” case (e.g., a thing is said to be hotter according as it more nearly resembles that which is hottest). 3. The maximum in any genus is the cause of all in that genus. 4. Therefore there must also be something which is to all beings the cause of their being, goodness, and every other perfection; and this we call God.   The Fifth Way: Argument from Design   1. We see that natural bodies work toward some goal, and **do not do so by chance.** 2. Most natural things lack knowledge. 3. But as an arrow reaches its target because it is directed by an archer, what lacks intelligence achieves goals by being directed by something intelligence. 4. **Therefore some intelligent being exists by whom all natural things are directed to their end; and this being we call God.** | |

<http://www.aquinasonline.com/Topics/probevil.html>

## Thomistic Philosophy Page

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### Aquinas and the Necessity of Natural Evils

The existence of evil is a problem with which every theist in the Western religious tradition must come to grips, but it is especially a problem for the Christian believer who holds that God is not only good and powerful, but all-good and all-powerful. In the attempt to gain a consistent understanding of evil in the light of these divine attributes, theists traditionally distinguish between two main types of **evils, moral and natural**. The greatest challenge to Christian theism seems to be posed by the existence of natural evils, since moral evils have their origin (at least with respect to their character as evil) in free moral agents. Just as one cannot hold parents at fault for the free evil choices of their children, so one cannot reasonably fault God for the existence of the moral evil caused by his creatures.

Natural evils, however, such as natural disasters or the physical corruption ubiquitously present in all of nature, do seem to be avoidable for an all-powerful God. Moreover, since this God is all-good, it seems that he would want to prevent such natural evils in his creation. The very existence of natural evils seems to indicate that God as all-powerful and all-good does not exist. In a traditional form, the atheological argument posed by the problem of natural evil was presented by Thomas Aquinas in the form of an objection to his proofs for the existence of God in the Summa Theologiae.

It seems that God does not exist; because if one of two contraries be infinite, the other would be altogether destroyed. But the name God means that He is infinite goodness. If, therefore, God existed, there would be no evil discoverable; but there is evil in the world. Therefore God does not exist.[1](http://www.aquinasonline.com/Topics/probevil.html#NOTE1)

### The Moral Sufficiency of Logical Necessity

Bruce R. Reichenbach seeks to defend God's exists in the face of natural evil by appealing to a morally sufficient reason for the existence of evil.[2](http://www.aquinasonline.com/Topics/probevil.html#NOTE2) According to this view, God must have a morally sufficient reason for allowing natural evils that makes it inappropriate to assign God any blame. Reichenbach accepts the atheist's contention that without a morally sufficient reason one could not reasonably accept the existence of an all-good and all- powerful God. Accordingly, he searches for some fact about the existence of natural evil and God's causality of the natural world which protects God from blame and preserves his perfect goodness.

To claim that natural evils are the unintended consequence of what God does intend, does not *ipso facto* exonerate God from culpability for their occurrence. Since God is omnipotent, he should be expected to have no limits to what he can bring about. Thus, as omnipotent, he should be able to create a world without natural evils. If such evils do occur, the morally sufficient reason that preserves God's goodness must arise from natural evil being **unavoidable**. God would be free from blame for natural evils, not only because they are unintended consequences, but more importantly because they are unavoidable.

Only what is logically necessary is unavoidable for God. A state of affairs is logically necessary if the description of the prevention of that state of affairs contains or entails a contradiction. Thus, for example, if God chooses and should choose a given good, and that good logically implies an accompanying evil, God is not blame-worthy for the evil. For God to choose the good but prevent the evil is a contradiction. The occurrence of the evil, in such a case, is logically necessary, and so God cannot be blamed for it. He would still be all-good, even though this evil were present in his creation.

Reichenbach thus proposes a *concatenation* of unavoidable necessity which renders it inappropriate to blame God for the existence of natural evils. According to Reichenbach, natural evils are the unintended consequence of the world operating according to natural laws, and these natural laws, in turn, are necessary for there to be free moral agents. That God wills free moral agents is likewise necessary because a world without them is inferior to a world with them. Given that God wills to have free moral agents, then he must also will the world to operate according to natural laws, which will result in natural evils. The only alternative to a world operated by natural laws is a world operated by miracle, but such a miraculous world would not allow for the existence of free moral agents and a significant exercise of their freedom. Reichenbach's theodicy thus hangs on this chain of necessity which holds God to having to allow natural evils in order to have free moral agents, which he is also bound to do.

Reichenbach gives two reasons for the impossibility of God creating free moral agents in a world operated my miracle. First, deliberation, a necessary condition for the exercise of rational choice, is prohibited given the confusion and unpredictability of a world operated by miracle. Moral action requires rational deliberation on the best means to attaining one's desired end. However, if the world does not operate according to any regularity, but only according to the caprice of divine will, then a moral agent has no way to anticipate which means are likely to bring about which ends. Moral action is thus thwarted because rational knowledge is impossible.

A second problem with a world in which God miraculously prevents all natural evil is that a rational inhabitant would not be significantly free because he would not have the real ability to do evil. This is because no matter what one intended, no evil results would come from one's actions. Someone who tried to kill his neighbor, for example, would not be free to hurt that neighbor, since God would not allow that neighbor to be hurt. Agents in a miraculous world could do no evil because God would be actively involved in thwarting their attempts to harm each other. Because a morally significant option is not available to such agents, they do not fit Reichenbach's definition of significant freedom. Thus, a world in which God had prevented physical evil would be one without freedom, since evil actions could not be performed. Because it would make freedom impossible, such a world could not have been created by God.

Reichenbach's attempt to float the claim that evil choices are not possible because evil effects are prevented by miraculous intervention arises from his understanding of the nature of moral evil. Moral evil is basically natural evil that is caused by free choice. Thus, presumably, if God eliminates the natural evil effect, then God prevents the evil choice.

### Aquinas and the Nature of Natural Evil

Reichenbach's defense of God's goodness in the light of natural evils pays the price of sacrificing his omnipotence. It assumes that God is bound by necessity to create free moral agents, and that this entails the further necessity of natural laws (with incidental evil) in order to have free moral agents. Moreover, these necessities have to be logical necessities: if God did not create free moral agent, and did not run the world by evil- occasioning natural laws, God would be involved in a logical contradiction. Aquinas' approach is different. He is willing to allow God the possibility of having created the world in much different way.

As a general criticism, the kind of evils which Reichenbach's theodicy does explain seem only to be natural disasters, i.e. occasional occurrences of nature wherein various lines of causality incidentally coincide. However, this is a mere subclass of natural evils. Natural evils include not only people and animals being in the wrong place at the wrong time( e.g. when a hurricane is obeying the laws of nature), but also the more pervasive evils of death and disease. A Thomistic theodicy is more comprehensive than Reichenbach's because it takes into account not only natural disasters, but all corruption and death. Aquinas does not consider natural evils to result only from things external to the victim of natural evils obeying natural laws. Rather, for Aquinas, natural evils include natural disasters, but also result from the very nature of things as material.

For Aquinas, bodies by their nature are susceptible to corruption and dissolution. Since they are composed of contrary elements, material things, including humans as bodily, have the potency for corruption.

But since the rational soul is likewise joined to a matter composed of contraries, from the inclination of that matter there results corruptibility in the whole man. In this respect, man is naturally corruptible as regards the nature of his matter, if it is left to its own inclination, but not as regards its form.[3](http://www.aquinasonline.com/Topics/probevil.html#NOTE3)

Because it is natural for the human soul to be united to a body composed of various elements, humans have the natural possibility of their bodies dissolving and decomposing. This possibility, however, is not due to their specific nature, i.e. their form or soul; it is due to what is matter for this form, i.e. the body. (For a discussion of the relationship between form and matter see, [The Principles of the Philosophy of Nature](http://www.aquinasonline.com/Topics/natrphil.html)) However, this possibility would not be actualized were it not due to the action of an exterior agent. The exterior agent, a lion for example, pursuing its own good, nutrition, incidentally bringing about the corruption of another thing, a lamb.

For a natural agent does not intend the privation or corruption; he intends the form to which is yet annexed the privation of some other form, and the generation of one thing, which yet implies the corruption of another.[4](http://www.aquinasonline.com/Topics/probevil.html#NOTE4)

The evil of corruption thus is unnatural to material things as regards their form. Nevertheless, the potency to be corrupted arises from their nature as material and composed of contrary elements. The natural evil of death and corruption is incidental to the action of the corrupting agent insofar as it incidentally brings about the corruption of another thing while intending its own preservation.

Given that God wanted to create free moral agents united to material bodies, is he even bound by any necessity that they be subject to the *vicissitudes* of natural evils? It might be naturally necessary for material things to be corruptible, but since God is the creator of their nature, he, in his omnipotence, need not be bound by their nature. Aquinas says that God's providence, before the Fall of Adam and Eve, could have and would have prevented the corruption that is natural to things, but which is merely potential in them.

Nevertheless, if we look at the matter rightly, it will appear sufficiently probable that, divine providence having fitted each perfection to that which is to be perfected, God has united a higher to a lower nature in order that the former might dominate the latter, and, should any obstacle to this dominion arise through a defect of nature, God by a special and supernatural act of kindness would remove it. Wherefore, since the rational soul is of a higher nature than the body, we believe that it was united to the body under such conditions, that there can be nothing in the body to oppose the soul whereby the body lives.... Hence, according to the teaching of faith, we affirm that man was, from the beginning, so fashioned that as long as his reason was subject to God, not only would his lower powers serve him without hindrance; but there would be nothing in his body to lessen its subjection; since whatever was lacking in nature to bring this about God by His grace would supply.[5](http://www.aquinasonline.com/Topics/probevil.html#NOTE5)

Thus, due to his enlightenment by Christian faith, Aquinas believes that man was originally preserved from the potency to corruption, i.e. death, which is implied by his being material, by the miraculous power of God. Such a state is traditionally termed the state of **original justice**. What is relevant for this philosophical discussion is that an omnipotent God could circumvent the inherent potency to corruption that being composed of contraries implies. Aquinas does see a miraculous world which prevents natural evil, and yet allows that free, moral human agents to be within the power of God to create and sustain.

Aquinas considers this state to be more than merely possible; he thought it was, in fact, probable on theological grounds. However, without this benefit of faith, it is *at least* possible. Moreover, it seems to be a possibility not considered by Reichenbach. The only alternative he saw to his theodicy was that God should prevent natural evils by direct divine circumvention of natural laws; i.e. a world operated by divine miracle. Is this possible alternate solution Aquinas suggests subject to Reichenbach's criticism of the miraculous world?

The relevant points in which Reichenbach saw the impossibility of combining the divine prevention of natural evil and free moral agents were two, namely that the unpredictability of a miraculous world would prevent the deliberation necessary for moral action, and by preventing the (natural) evil effects of human action, God compromises human freedom by not allowing for evil choices. In order to see if the alternative suggested by Aquinas is really possible, we should see whether it implies unpredictability and a lack of freedom for its inhabitants.

In the first place, it seems that a state in which God supernaturally prevented the potency of corruption inherent in material things from being actualized does not imply that it be chaotic and unpredictable. The miracle that God performs in the state of original justice only preserves the coherence of the human body from the actions of exterior agents which are incidentally destructive. The human body in the state of original justice would be indestructible. As such, it would eliminate all the natural evils with which Reichenbach is concerned, yet natural laws would still operate as they do in our world. Avalanches might still occur, but in order to avoid natural evil, God would not have to make them swerve around climbers or halt at their feet.[6](http://www.aquinasonline.com/Topics/probevil.html#NOTE6) A climber would merely be pelted by snow and suffer no physical harm. The state of original justice would thus be populated by supermen and superwomen made "super-" by the supernatural grace of God. Humans' capacity for ethical deliberation would be unaffected, and if anything improved, because of the complete mastery of the soul over the body which God ensures.

Only if one takes as the definition of moral evil the one given by Reichenbach would the kind of miraculous world suggested by Aquinas prevent significantly free moral behavior by eliminating the possibility of doing evil. Reichenbach defines moral evil as instances of pain and suffering for which human agents are culpable, of which a necessary component is physical or natural evil. But if moral evil consists primarily in an intention, then moral evil is possible and humans in this state of original justice are free. One may not be able to kill one's neighbor or do any physical harm in the state of original justice, but one can fail to give him what is owing to him, e.g. friendship. In an easier case, one is still free because one can in the state of original justice disobey and defy God; such moral evils require no physical evil for their commission.

With Aquinas' understanding of the state of original justice having withstood the critiques of Reichenbach, it seems that God could have created a world without natural evil. It is entirely compatible with the existence of free moral agents, and so God is prevented by no logical necessity from creating it. But on Aquinas' view, neither is he bound positively to create or to continue to sustain it if he had created such a world in the past. Aquinas makes it clear that the state of original justice was sustained by supernatural, gratuitous divine favor. According to Aquinas, no world is so good that God is bound to create it, no so bad that, so long as it has some share of being, he is prevented from creating it. (For an elaboration and justification of this claim, see the article on [The Best of All Possible Worlds](http://www.aquinasonline.com/Topics/boapw.html)) God could prevent natural evil, but its occurrence does not imply that God is either not omnipotent or not all-good. The prevention of natural evil is possible for Aquinas precisely because God **is** omnipotent, but his failure to do so would not entail that God is less than all-good.

P>Thus, Aquinas' reply to the atheological argument, formulated in the first objection to the question of whether there is a God quoted at the beginning of this paper, leaves the reason for evil ultimately as a mystery. "This is part of the infinite goodness of God, that he should allow evil to exist, and out of it produce good."[7](http://www.aquinasonline.com/Topics/probevil.html#NOTE7) The atheological argument from natural evil, however, does not vitiate our assurance in the existence of God. Knowing that God exists and is all-good and all powerful, the existence of evil is a mystery, but it does not undermine this knowledge. If God allows evil, then he must bring good out of it. Yet, God's permission of evil is not necessitated by anything. On the contrary, Aquinas believes that evil did not exist for humans in an Edenic past, and it will be eliminated in a heavenly future. Thus, our assurance in God's goodness and existence, untroubled by the evils present in this world, is based on realities other than, or perhaps deeper than, the mere nature of physical things, vis. the being and goodness of the things in which evil is found.

### NOTES

1 Thomas Aquinas,*[Summa Theologiae](http://www.newadvent.org/summa/1002.htm" \l "article3)*[Ia, 2, 3 obj. 1.](http://www.newadvent.org/summa/1002.htm" \l "article3)[Return](http://www.aquinasonline.com/Topics/probevil.html#MARK1)

2 *Evil and a Good God*, (New York: Fordham University Press, 1982), p. 87[Return](http://www.aquinasonline.com/Topics/probevil.html" \l "MARK2)

3 *[ST](http://www.newadvent.org/summa/3085.htm" \l "article6)*[I-II, q. 85, a. 6.](http://www.newadvent.org/summa/3085.htm" \l "article6)[Return](http://www.aquinasonline.com/Topics/probevil.html#MARK3)

4 *[ST](http://www.newadvent.org/summa/1019.htm" \l "article9)*[, Ia, q. 19, a. 9.](http://www.newadvent.org/summa/1019.htm" \l "article9)[Return](http://www.aquinasonline.com/Topics/probevil.html#MARK4)

5 Thomas Aquinas, *Summa Contra Gentiles*, Book IV, ch. 52.[Return](http://www.aquinasonline.com/Topics/probevil.html" \l "MARK5)

6 See *Evil and a Good God*, p. 108.[Return](http://www.aquinasonline.com/Topics/probevil.html" \l "MARK6)

7 *ST* Ia, q. 2, a. 3 ad 1.[Return](http://www.aquinasonline.com/Topics/probevil.html" \l "MARK7)

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<http://www.ucmp.berkeley.edu/history/paley.html>

**William Paley (1743-1805)**

In order to pass the B.A. examination, it was, also, necessary to get up Paley's *Evidences of Christianity*, and his*Moral Philosophy*. . . The logic of this book and as I may add of his *Natural Theology* gave me as much delight as did Euclid. The careful study of these works, without attempting to learn any part by rote, was the only part of the Academical Course which, as I then felt and as I still believe, was of the least use to me in the education of my mind. I did not at that time trouble myself about Paley's premises; and taking these on trust I was charmed and convinced of the long line of argumentation.

Charles Darwin. *Autobiography*

Born in July 1743, in Peterborough, England, William Paley trained for the Anglican priesthood, graduating from Christ's College, Cambridge in 1763. He was appointed a fellow and tutor of his college in 1766, and rose through the ranks of the Anglican Church. He died on May 25, 1805.

Paley wrote several books on philosophy and Christianity, which proved extremely influential. His 1794 book *A View of the Evidence of Christianity* was required reading at Cambridge University until the 20th century. His most influential contribution to biological thought, however, was his book *Natural Theology: or, Evidences of the Existence and Attributes of the Deity, Collected from the Appearances of Nature*, first published in 1802. In this book, Paley laid out a full exposition of natural theology, the belief that the nature of God could be understood by reference to His creation, the natural world. He introduced one of the most famous metaphors in the philosophy of science, the image of the watchmaker:

. . . when we come to inspect the watch, we perceive. . . that its several parts are framed and put together for a purpose, e.g. that they are so formed and adjusted as to produce motion, and that motion so regulated as to point out the hour of the day; that if the different parts had been differently shaped from what they are, or placed after any other manner or in any other order than that in which they are placed, either no motion at all would have been carried on in the machine, or none which would have answered the use that is now served by it. . . . the inference we think is inevitable, that the watch must have had a maker -- that there must have existed, at some time and at some place or other, an artificer or artificers who formed it for the purpose which we find it actually to answer, who comprehended its construction and designed its use.

Living organisms, Paley argued, are even more complicated than watches, "in a degree which exceeds all computation." How else to account for the often amazing adaptations of animals and plants? Only an intelligent Designer could have created them, just as only an intelligent watchmaker can make a watch:

The marks of design are too strong to be got over. Design must have had a designer. That designer must have been a person. That person is GOD.

And, as Paley went on to argue, if God had taken such care in designing even the most humble and insignificant organisms, how much more must God care for humanity!

The hinges in the wings of an earwig, and the joints of its antennae, are as highly wrought, as if the Creator had nothing else to finish. We see no signs of dimunition of care by multiplicity of objects, or of distraction of thought by variety. We have no reason to fear, therefore, our being forgotten, or overlooked, or neglected.

Paley's arguments go back to authors such as [John Ray](http://www.ucmp.berkeley.edu/history/ray.html), and have had a long intellectual history, surviving to the present day in many a piece of creationist rhetoric. Yet Charles Darwin, while himself a student at Christ's College of Cambridge University, not only had to read Paley, but was deeply impressed with Paley's arguments, as the quote at the top of this page shows. Even though Paley's concept of God as a designer is very different from Darwin's theory of natural selection, Darwin took from his reading of Paley a belief in adaptation -- that organisms are somehow fit for the environments in which they live, that their structure reflects the functions they perform throughout their lives. Where natural theology ran into trouble was in explaining the many cases of apparent pain, waste, and cruelty in the living world: why would a benevolent Designer have made cats play with mice before killing them, or parasites that eat their hosts from the inside? Paley struggled to reconcile the apparent cruelty and indifference of nature with his belief in a good God, and finally concluded that the joys of life simply outweighed its sorrows. Where Darwin departed from Paley was in his concept of natural selection as a process that could produce adaptation and design without the all-encompassing intervention of a benevolent Designer.

[More on Paley's natural theology](http://www.victorianweb.org/religion/paley1.html) is available from [The Victorian Web](http://www.victorianweb.org/).

<http://plato.stanford.edu/entries/aristotle-natphil/>

# Aristotle's Natural Philosophy

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Aristotle had a lifelong interest in the study of nature. He investigated a variety of different topics, ranging from general issues like motion, causation, place and time, to systematic explorations and explanations of natural phenomena across different kinds of natural entities. These different inquiries are integrated into the framework of a single overarching enterprise describing the domain of natural entities. Aristotle provides the general theoretical framework for this enterpise in his Physics, a treatise which divides into two main parts, the first an inquiry into nature (books 1–4) and the second a treatment of motion (books 5–8).[[1](http://plato.stanford.edu/entries/aristotle-natphil/notes.html" \l "1" \t "other)] In this work, Aristotle sets out the conceptual apparatus for his analysis, provides definitions of his fundamental concepts, and argues for specific theses about motion, causation, place and time, and establishes in bk. 8 the existence of the unmoved mover of the universe, a supra-physical entity, without which the physical domain could not remain in existence. He takes up problems of special interest to physics (such as the problem of generation and perishing) in a series of further physical treatises, some of which are devoted to particular physical domains: the De generatione et corruptione (On Generation and Perishing), the De caelo (On the Heavens),[[2](http://plato.stanford.edu/entries/aristotle-natphil/notes.html" \l "2" \t "other)]and the Meteorology, which lead up to the treatises on biology and psychology.

The science of physics, Aristotle stresses, contains almost all there is to know about the world. Were there no separate forms—entities such as the unmoved mover at the pinnacle of the cosmos—which are without matter and are not part of the physical world, physics would be what Aristotle calls first philosophy (Metaphysics 6.1, 1026a27–31). As there are such separate entities, physics is dependent on these, and is only a second philosophy (Metaphysics7.11, 1037a14f). Nevertheless, the interaction between these two “philosophies” is not completely exhausted by the causal influence exerted on the world by the supra-physical entities—the prime movers as it turns out. Aristotle's metaphysics and physics use a common conceptual framework, and they often address similar issues. The prime and distinctive task of first philosophy is an inquiry into first entities; these, however, are not perceptible entities, and as a result they have to be investigated through a metaphysical investigation of physical entities. Hence the overlap between the two disciplines, which often verges on inseparability.

* [1. Natures](http://plato.stanford.edu/entries/aristotle-natphil/#1)
  + [1.1 The four causes](http://plato.stanford.edu/entries/aristotle-natphil/#1.1)
* [2. Motion](http://plato.stanford.edu/entries/aristotle-natphil/#2)
* [3. The principle of causational synonymy](http://plato.stanford.edu/entries/aristotle-natphil/#3)
* [4. Priority among motions](http://plato.stanford.edu/entries/aristotle-natphil/#4)
* [5. Movers and unmoved movers](http://plato.stanford.edu/entries/aristotle-natphil/#5)
* [Glossary of Aristotelian terms](http://plato.stanford.edu/entries/aristotle-natphil/#Glos)
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## 1. Natures---Nature, according to Aristotle, is an inner principle of change and being at rest (Physics 2.1, 192b20–23). This means that when an entity moves or is at rest according to its nature reference to its nature may serve as an explanation of the event. We have to describe how—to what extent, through what other processes, and due to what agency—the preconditions for the process of change or being at rest are present, but once we have provided an account of these preconditions, we have given a complete account of the process. The nature of the entity is in and of itself sufficient to induce and to explain the process once the relevant circumstances do not preempt it.

Natures as inner principles of change and rest are contrasted with active powers or potentialities (dunameis), which are external principles of change and being at rest (Metaphysics 9.8, 1049b5–10), operative on the corresponding internal passive capacities or potentialities (dunameis again,Metaphysics 9.1, 1046a11–13). When a change, or a state of rest, is not natural, both the active and the passive potentiality need to be specified. Natures, then, in a way do double duty: once a nature is operative, neither a further active, nor a further passive capacity needs to be invoked. Even so, as will be clear from Aristotle's discussion, this general thesis will require a host of qualifications.

Because natures—beside the active and passive potentialities—are ultimate grounds in causal explanations, Aristotle sets out how they are integrated with the doctrine of causation.

### The four causes

An explanation for a state of affairs must specify some fact or object (in general, some abstract or concrete entity) which is responsible for it. The entity responsible is, Aristotle submits, a cause (aitia or aition, words used interchangeably by Aristotle).[[3](http://plato.stanford.edu/entries/aristotle-natphil/notes.html" \l "3)] Different explanations of a single state of affairs are possible, and indeed usually necessary, because there are different ways of being reponsible for distinct facets of the same state of affairs. The varieties of responsibilities are grouped by Aristotle under four headings, the so-called four causes.

The first two of these are matter and form, what an entity is made up from according to Aristotle's hylomorphic analysis. Understandably, both of them can be responsible for the features and the behaviour of the entity they make up. Hylomorphic analysis, together with the separation of the material and formal causes as distinct types, implies that if something is explicable in terms of matter or form, explanations in terms of form will be different in kind from those given in terms of matter. As a rule there is a collaboration between these causes: matter provides the potentialities which are actualised by the form. But this collaboration is not such that the two types of explanations overlap. Rather, these causally relevant entities give rise to a hierarchic structure of explanation. In order for a form to be realised, one needs to have suitable matter. This suitable matter brings with it the features required by a given hylomorphic composite. These features, then, are on the one hand the contribution of the matter, and as such the matter is the (material) cause of these features of the composite entity, whereas on the other hand they are indispensable presuppositions for the realisation of the form, and to that extent their presence is prompted by the form.[[4](http://plato.stanford.edu/entries/aristotle-natphil/notes.html" \l "4)] Such dependency relations between matter and form are labelled by Aristotle as cases of hypothetical necessity. Aristotle sometimes illustrates his point by appealing to the matter required for the construction of a house. If there is a house to be built, one needs building bricks, slabs, mortar, etc. Each part provides material with properties within a definite range of the sort required for a house to come into being. A house cannot, for example, be made out of liquid water. This sort of matter provides potentialities not suited to the form of house.

Explanations often specify entities beyond the role played by the matter and the form of the entity itself. These cases are grouped by Aristotle as efficient or moving causes on the one hand and as final causes on the other. Efficient causes operate in a straightforward manner by initiating processes and bringing about their effects, whereas final causes account for processes and entities by being what these processes and entities are for, what they objectively intend to attain.[[5](http://plato.stanford.edu/entries/aristotle-natphil/notes.html" \l "5)] The fact that the role of efficient causes is not identical to that of the matter and the form of the entity whose features they are to explain does not require that every instance of efficient causation must issue from outside the entity moved. On the contrary, an efficient cause can also be internal. In cases in which the efficient cause is internal, it will be, in its specific function, one of the parts, or even the formal aspect, of the entity caused to move.

Natures, understandably, can feature in any of these four causal functions. However, when the matter of an entity functions as its nature—i.e., when its natural motion and rest are explained in terms of the matter it is made of—this matter must possess some causally relevant features, bestowed upon it by its own formal aspect.

This role of matter can be contrasted to the causal role of the three further types of causes—of form, of efficient cause, and of final cause respectively. This is so, because, as Aristotle adds, form and final cause often coincide. Moreover, when a nature is specified as a first efficient cause, cause and effect are the same in form (or in species), though this is not to say that one and the same entity causes itself and is caused through its own causal efficacy (Physics2.7, 198a24–27, cf. Metaphysics 8.4, 1044a32-b1).

As internal principles of moving and rest, natures stand in an exclusive relationship to the efficient or moving causes of the motions and rests they bring about: in some cases when Aristotle is not specifying the first moving cause, he can assert the identity of nature and moving cause. Accordingly, the soul of living beings will be identified as the substance (i.e., form) and the moving cause of the organism whose soul it is.[[6](http://plato.stanford.edu/entries/aristotle-natphil/notes.html" \l "6)] But the identification, even in this restricted sense, will need some further important qualifications, to which we will return in [Section 5](http://plato.stanford.edu/entries/aristotle-natphil/#5) below, on movers and unmoved movers.

## 2. Motion-Because motion or change (kinêsis) is mentioned in the definition of nature, any discussion of nature will need to rely upon the explanation of motion. One might—erroneously—think that this is an easy task, because Aristotle's categories (as listed in the Categories and also elsewhere) do contain two related types of entities, action and passion. Aristotle's discussion of motion in the Physics, however, starts out in a somewhat different manner. When he submits that there is no motion besides the categories (Physics 3.1, at 200b32–201a3), he does not assign motions to the categories of action and passion. After mentioning that the entities in the categories come in oppositions, Aristotle submits a few lines later (at 201a8–9) that there are as many kinds of motion and change as there are kinds of being. This means that motions are grouped here with the entities of the category where they effect change.[[7](http://plato.stanford.edu/entries/aristotle-natphil/notes.html" \l "7)]

Nevetheless, when making this claim, Aristotle speaks about four kinds of motion and change only—those in substance, in quality, in quantity and in place—whereas the number of the kinds of being should have remained ten.

Indeed, the Physics will later submit its own list of categories. That list is slightly reduced—it has seven or eight elements, depending on whether we include or exclude time.[[8](http://plato.stanford.edu/entries/aristotle-natphil/notes.html" \l "8)] The reduced list also concludes with the claim that there are three kinds of motion, plus the additional kind of substantial change.[[9](http://plato.stanford.edu/entries/aristotle-natphil/notes.html" \l "9)] That is to say, even where Aristotle enumerates a fairly complete list of categories, he will not have motions in every one of these categories, and he is not content to include motions in the categories of action and passion.[[10](http://plato.stanford.edu/entries/aristotle-natphil/notes.html" \l "10)] But this is a context where Aristotle stresses another issue: he is not interested in assigning a separate ontological niche for motions—regardless of whether that might or might not have been a feasible task within the categorization of entities. Here Aristotle is more intent on characterizing the ontological links which motions have to entities falling into different categories, and to find a general matrix of undergoing and effecting change. This happens in several steps. First Aristotle claims that changes of relations are not changes in their own right; rather they are accidental, as they occur also in entities in which no change occurs at all, if the entity which they stand in relation to undergoes some change.[[11](http://plato.stanford.edu/entries/aristotle-natphil/notes.html" \l "11)] After these considerations the crucial two categories of action and passion are eliminated: As there are no motions of motions, we can set aside action and passion (items (7) and (8) in the Categories).[[12](http://plato.stanford.edu/entries/aristotle-natphil/notes.html" \l "12)] This leaves us with the shorter list of relevant categories, (1) substance, (2) quality, (3) quantity, and (4) place.[[13](http://plato.stanford.edu/entries/aristotle-natphil/notes.html" \l "13)]

Within the four domains where genuine change can occur, change always requires the existence of a potentiality which can be actualised. But change is neither identical to this potentiality, nor to the lack of a property, nor, without further qualifications, to the actuality which is acquired when the potentiality is actualised (Physics 3.2, 201b33–35). It is a special kind of actuality, the actuality of the potential in so far as it is potential (Physics 3.2, 201a27–29). Aristotle's formulation strongly suggests that the potentiality actualised in the process of change is not a separate and independent potentiality for motion, alongside the entity's potentiality for harbouring the end-state of the process: the process, say, house-building, and the end result, the house, are different actualisations of the same potentiality of a set of materials that is buildable into a house. Not only would Aristotle's definition be uninformative and circular otherwise, amounting to the tautologous claim that change is the actualisation of the capacity for change, the further qualification in the definition, that change is the actuality of the potential in so far as it is potential, would be completely idle. This further restriction is meant to select among the different types of the realisations of the same potentialities.[[14](http://plato.stanford.edu/entries/aristotle-natphil/notes.html" \l "14)] As Aristotle stresses these are the incomplete actualities belonging to these potentialities, because what is actualised in a process of realisation is an incomplete potentiality only (Physics 3.2, 201b32–33). Accordingly, potentialities of change are readmitted into the ontology. They, nevertheless, do not feature as potentialities in their own right, but as the incomplete variants of the fundamental potentiality for an end result.[[15](http://plato.stanford.edu/entries/aristotle-natphil/notes.html" \l "15)]

It is furthermore important to note that potentiality in this discussion throughout excludes actuality. In a formulation closely matching the formulation of the principle of non-contradiction, Aristotle asserts that “some things are the same [=have the same properties, are the same substances] both in potentiality and in actuality, but not at the same time or not in the same respect, as e.g. [a thing is] warm in actuality and cold in potentiality” (Physics3.1, 201a19–22).[[16](http://plato.stanford.edu/entries/aristotle-natphil/notes.html" \l "16)] Hence the ability of Aristotle's definition to pick out the paradoxical entity, which is the actuality of a potentiality that can no longer be present once it has been replaced by the corresponding property in actuality.

## 3. The principle of causational synonymy--The definition of motion suggests that such processes can be characterised in terms of a property or state of an entity, acquired as a result at the end of the process, which can be labelled the form within this process, and an initial lackof this form. Furthermore, Aristotle claims, there is a third component, which is not changed in the process, the substrate or subject of the motion (Physics1.7).[[17](http://plato.stanford.edu/entries/aristotle-natphil/notes.html" \l "17)]

In term of this threefold division it is the duty of the entity effecting change to confer the requisite form on the object changed, as Physics 3.2, 202a9–11 puts it. But there are further important requirements for such a change to occur. First of all, these motions or changes occur at the interaction of two potentialities. One, the passive potentiality, is in the object undergoing change, while the other, the active potentiality, is in the entity initiating change. The two potentialities need to match each other: when there is a potentiality for being heated in the object undergoing change, the process needs to be initiated by another object possessing an active potentiality for effecting heat. This is true to the extent that Aristotle can claim that the definition of passive potentiality is dependent on that of the active potentiality (Metaphysics 9.1, 1046a11–13). These two potentialities need to work in tandem, and consequently Aristotle can claim that there is only a single process going on, which is located in the entity moved. Thus, for example, when a process of instruction is going on, it is identical to a process of knowledge acquisition, which happens in the mind of the learner. Hence although action and passion retain their categorical difference, because their accounts are different, what they subsist in, the motion, will be the same (Physics 3.3, 202b19–22).[[18](http://plato.stanford.edu/entries/aristotle-natphil/notes.html" \l "18)]

Aristotle already by the introduction of a matching pair of active and passive potentialities for each causal interaction comes very close to admitting a separate potentiality for each and every change, something uncomfortably close to the vis dormitiva, ridiculed by Molière, according to which a sleeping pill allegedly induces sleep just in virtue of its power to induce sleep. Aristotle, however, subscribes to an even stronger principle, that causes in effecting change transmit the form they possess to the entity they effect change in, so that they have to be synonymous with the effects they bring into existence. In Aristotle's favourite example, only a human in actuality produces a human from what is a human in potentiality. If this is so, a sleeping pill need not only possess an active potentiality for inducing sleep: it needs also to be slumbering itself.[[19](http://plato.stanford.edu/entries/aristotle-natphil/notes.html" \l "19)] The principle—which we could term the principle of causational synonymy—comes from Plato (see e.g. Phaedo 100B-101D), but Aristotle has his own reasons for endorsing it. His science attests to the presence and operation of causally active forms at each level of analysis of the physical world.[[20](http://plato.stanford.edu/entries/aristotle-natphil/notes.html" \l "20)] Hence, as we shall see, Aristotle's forms are the causally significant components of the substance effecting a change. Accordingly, when it comes to specifying the moving cause of an artefact, Aristotle will refer to the art of the craftsman as the fundamental component operative in the change. In cases where a living being is generated, it is the parental form which is transmitted to the newly emerging living being.[[21](http://plato.stanford.edu/entries/aristotle-natphil/notes.html" \l "21)]

But it is not only processes of generation that conform to this requirement. Instances of qualitative change are often mentioned alongside substantial generation, and as a crucially important instance of qualitative alteration—or of qualitative quasi-alteration, depending on how we interpret Aristotle's theory of perception (on this debate see the supplementary note on[Controversies Surrounding Aristotle's Theory of Perception](http://plato.stanford.edu/entries/aristotle-psychology/suppl3.html))—Aristotle presupposes that the principle of causational synonymy characterises also the causal link connecting the object of sensation and the sense organ.

It is, nevertheless, important to note that Aristotle restricts the principle of causal synonymy in different and subtle ways. Most significantly, an important domain of cases where a property of an object is actualised is exempted from the requirements of this principle. The actualisation of a property can be the continuation of a previous causal process to the extent that Aristotle claims it is a second actuality, following upon a previously acquired first actuality. In these cases the emergence of the second actuality does not necessarily require an additional external efficient cause. The operation of this first actuality, through which it reinforces and completes itself, can be the mere extension of the operation of the original efficient cause (this will be Aristotle's claim about the natural locomotion of the elements, see [Section 5](http://plato.stanford.edu/entries/aristotle-natphil/#5) below), or the entity which has acquired this first actuality can be already causally responsible for its own activities, including the ones which bring it to a level of higher actuality[[22](http://plato.stanford.edu/entries/aristotle-natphil/notes.html" \l "22)] (Aristotle's examples for this case are the soul of the embryo or of the newborn cub, which commands and effects the nourishing and the activities of the animal; or the actual application of a piece of knowledge one has acquired beforehand). It is important to note that these claims are far from trivial: they rest on further claims that the very definitions of these first actualities (what it is to be an element, an animal, or knowledge, respectively) inseparably include references to these activities.

Second, the principle is couched in terms which do not include locomotions: it is substantial, qualitative or quantitative form which is claimed to be transmitted through the efficacy of the cause in Physics 3.2, 202a9–12. One of the reasons for this is that locomotion, as Aristotle submits, affects the least the substance, the ousia of the object undergoing motion (Physics 8.7, 261a20f). Unlike the other types of change, locomotion does not change the being of the moved object at all. To some extent that should mean that the predication of place should remain extrinsic to the being of the entity that is at a particular location.[[23](http://plato.stanford.edu/entries/aristotle-natphil/notes.html" \l "23)] Hence the fundamental presupposition of causation, that it is intrinsic characterisations of entities which are conferred on the object moved cannot be in full force in cases of locomotion.[[24](http://plato.stanford.edu/entries/aristotle-natphil/notes.html" \l "24)] Accordingly, Aristotle will have a more intricate account for natural and forced locomotions.

Third, the principle of causational synonymy is restricted to substances at the end of Metaphysics 7.9,[[25](http://plato.stanford.edu/entries/aristotle-natphil/notes.html" \l "25)] and in the first half of the same chapter the non-standard presence of some causally relevant forms may also be envisaged. Aristotle's example there is the heat in motion, which produces heat in the body when the doctor rubs the patient in the appropriate manner. This heat in the motion can be the presence of an active potentiality in the motion which is able to elicit heat in the body, without heat being predicable of motion itself. But even if such non-inherential subsistence of properties is not envisaged in this passage—the alternative being that the heat in motion is the heat in the skin of the patient, caused by the rub, which then enters into the inner recesses of the body, becoming heat in the body—some similar sort of presence is required in two large classes of cases: natural generations and artificial productions.

Aristotle claims that in a chain of efficient causes, where the first element of the series acts through the intermediary of the other items, it is the first member in the causal chain, rather than the intermediaries, which is the moving cause (Physics 8.5, 257a10–12). Then, both in cases of natural generation and artificial production, it is only this first efficient cause which has to satisfy the requirement of synonymous causation. Aristotle's prime example, that human generates human, is also such a case. Here, the causal efficacy of the paternal human form is transmitted through the generative potentialities of the semen of the father. The semen, however, although it acts as an efficient cause in the process of the formation of the embryo, is not a human; it does not possess the form it transmits in the same way as the male parent. Aristotle's discussion makes it clear that this is not an isolated instance of an exception from the general principle. He compares the case to the activity of a craftsman, where the form of the product of the artistic production is in the soul of the craftsman, and then through the motions of the instruments this form can get imposed on the material manufactured into an artefact. The instruments and their motions are efficient causes of the process, but they do not contain the form in the same way as the soul of the craftsman (On the generation of animals 730b14–23 and 740b25–29, for further discussion see the entry on [Aristotle: Biology](http://plato.stanford.edu/entries/aristotle-biology/)).[[26](http://plato.stanford.edu/entries/aristotle-natphil/notes.html" \l "26)]

All these restrictions notwithstanding, Aristotle can claim that the principle of causational synonymy remains universally valid. This is so, because all the three restrictions above specify cases where Aristotle can claim that a preceding, more prominent cause has already satisfied the requirement: in the case of second actualities the first actuality was called into existence by a synonymous cause in the first place; locomotions, qualitative and quantitative changes, even if not caused by a synonymous entity, can be part of a larger pattern of causation, in which a substance is caused by a substance of the same kind; and causal chains producing substances can be claimed to start out invariably from synonymous substances.

Given his commitment to causal synonymy, Aristotle needs to invoke considerations through which a chain of efficient causes of some entity can be meaningfully compared in terms of causal efficacy. These considerations will on each occasion describe synonymous causes not only as temporally prior, but also as having priority in terms of causal efficacy over the intermediate causes, which are responsible only for the transmission of the forms of the original locus of causal efficacy.

This allows, then, that in the two major paradigms of such causation—in natural generation and in artificial production—the forms—the nature of the natural entity, and the art[[27](http://plato.stanford.edu/entries/aristotle-natphil/notes.html" \l "27)] of the craftsman exercising his art respectively—are the causally operative entities initiating change. This has wide ranging consequences for the status of forms in several respects. First, the causal relevance of these forms shows that not any arrangement or configuration can qualify as a full-fledged form. While it is true that privations are also forms in some sense (Physics 2.1, 193b19–20), this is not the sense in which the causally operative forms, describable in evaluative terms, can be called forms. Moreover, the causal relevance of forms allows Aristotle to switch (e.g. in De generatione et corruptione 1.7) without notice between the craftsman and the craft itself as the appropriate specification of the efficient cause in these cases. We should note that in the latter cases, Aristotle specifies causes which are unmoved. They do not effect motion by being in motion themselves, in so far as they are the causally effective forms within the causal framework; hence they are not under any reactive influence during this process either.

## 4. Priority among motions--Even though the foregoing might have suggested that generation of substances is fundamental for all the other kinds of changes, in fact locomotion will have a privileged status. All other changes depend on locomotions, because any two entities involved in change, with their active and passive potentialities respectively, need to come into contact in order for the interaction to occur.[[28](http://plato.stanford.edu/entries/aristotle-natphil/notes.html" \l "28)]Contact, however, as a rule needs to be established by locomotion: either the entity to be moved, or the mover, or both, need to proceed so that they meet (Physics 8.7, 260a26-b7). Moreover locomotion is the form of change which can occur in isolation of generation, perishing and the other forms of change (Physics 8.7, 260b26–29). Other changes are indepedent kinds of change insofar as they can occur in an entity which does not perform any other change. Nevertheless all these forms of change include or presuppose that some other entity engages in locomotion.[[29](http://plato.stanford.edu/entries/aristotle-natphil/notes.html" \l "29)]

Aristotle argues at the opening of Physics bk. 8 that motion and change in the universe can have no beginning, because the occurrence of change presupposes a previous process of change. With this argument Aristotle can establish an eternal chain of motions and refute those who hold that there could have been a previous stationary state of the universe. Such an eternal chain, Aristotle argues, needs to rely on a cause which guarantees its persistence: if each of the constitutive processes in the causally connected web were of finite duration, for every one of them it can be the case that it is not present in the world, indeed, at some later time it will not be present any longer. But then the whole causally connected series of events, Aristotle submits, would also be contingent.[[30](http://plato.stanford.edu/entries/aristotle-natphil/notes.html" \l "30)] Hence Aristotle postulates that the processes of the universe depend on an eternal motion (or on several eternal motions), the eternal revolution of the heavenly spheres, which in turn is dependent on one or several unmoved movers (Physics 8.6, 258b26–259a9).[[31](http://plato.stanford.edu/entries/aristotle-natphil/notes.html" \l "31)]

The priority of the eternal celestial revolutions, furthermore, guarantees the causal finitude of the universe. This is so, even though there are infinite causal chains: behind every single individual of an animal species there is an infinite series of male ancestors, each causally responsible for the subsequent members in the series, because Aristotelian species are eternal and male parents are the efficient causes of their offspring.[[32](http://plato.stanford.edu/entries/aristotle-natphil/notes.html" \l "32)] Left to its own devices, the finite universe on its own would swiftly reach a dissolution, a state of complete separation of the elemental masses into their concentrically arranged natural places. In view of the fact that such a complete segregation of the elemental masses is avoided through the constant excitation caused by the celestial motions, producing heat in the sublunary domain, especially around the regions of the Sun,[[33](http://plato.stanford.edu/entries/aristotle-natphil/notes.html" \l "33)] Aristotle will be entitled to assert that the cause of the human being is in the first instance his or her father, but is at the same time the Sun as it moves along its annual ecliptic path.[[34](http://plato.stanford.edu/entries/aristotle-natphil/notes.html" \l "34)] Between celestial revolutions and the individual natural processes there is always a finite causal chain, as these natural processes could not possibly have continued without the celestial motions. The infinite causal chains passing through male parents cannot subsist on their own without this constant external support, and this dependence can always be analysed in terms of finite causal chains.

## 5. Movers and unmoved movers--The definition of motion as the actuality of a potentiality of the entity undergoing motion in so far as it is potential requires that in each case the passive potentiality for the change is present in the changing object. The presence of the potentiality can, nevertheless, be in accordance with the nature of the object—in which case the change is natural (phusei) or according to nature (kata phusin), or can happen in the face of a contrary disposition on the part of the nature of the entity—in which case the change is forced (biâi) orcontrary to nature (para phusin). A major presupposition on Aristotle's part is that this division is exhaustive: there are no changes to which the nature of the entity would be indifferent or neutral.[[35](http://plato.stanford.edu/entries/aristotle-natphil/notes.html" \l "35)] The major consideration behind such a presupposition is that natures regulate the behaviour of the entities to which they belong in a comprehensive manner, and not merely partially. Any influence the entity is exposed to interacts with the nature in a substantive manner. The entity does not possess potentialities for change which would not be directly related to the tendencies emerging from its nature.

Note, however, that even if we endorsed the exhaustiveness of the dichotomy of natural and forced motions, and accepted the thesis that simple bodies possess a unique natural motion (De caelo 1.2, 269a8–9), we would not need thereby to accept Aristotle's further major claim, that natural and forced motions come in pairs of contraries, with the result that if a motion is contrary to the nature of an entity, the contrary motion will be its natural motion (De caelo 1.2, 269a9–18). Where there is room for some more complex relationships among the endpoints of changes than a simple opposition along an axis of a single dimension—and this is eminently so between locomotions along rectilinear and circular paths respectively—there can be several forced translations in contrast to the single natural motion, as Aristotle also admits in some passages of the De caelo (see 1.2, 269a18-b2 and 269b10-12; for a more complex description of the relationships between circular motion and rectilinear ones in opposite directions see 270b32–271a5).[[36](http://plato.stanford.edu/entries/aristotle-natphil/notes.html" \l "36)]

Aristotle's classification of motions into those contrary to nature and those according to nature applies not only to the motions of the moved objects, but transfers also to the movers effecting motions. A mover can effect a motion which is contrary to its own nature. Aristotle's example of such an unnatural mover is the lever, an object heavy by nature, with which loads can be lifted (Physics 8.4, 255a20–23). Although such movers can effect motions in the contrary direction to the motion at the head of the causal chain (levers are operated by the downward push of something heavy at the other end), the crucial consideration for Aristotle in this case is that the original, initiating cause of the causal chain should effect the motion according to its nature. Taken together, these considerations imply that we have a complete account of the physical domain once we have a thorough description of what is natural to the entites in that domain, together with a specification of all the circumstances in which they operate.[[37](http://plato.stanford.edu/entries/aristotle-natphil/notes.html" \l "37)]

Bk. 8 of the Physics argues for the additional thesis that for each motion, whether natural or contrary to nature, there needs to exist a mover. In cases of forced motion, movers are present in a perspicuous way. This need not be so, however, in cases of natural motion. Apart from the cases where the nature of the entity is at the same time a moving and efficient cause—i.e., apart from living beings, whose nature, the soul, is both formal and efficient cause—the mover may be inconspicuous. This is eminently so in the remaining large class of natural motions, the natural motions of the elements. The nature of these elements, their inner principle of motion and rest is not the moving cause of the motions of the elements, Aristotle claims. If it were, then it would be up to the elementary masses to determine when they should perform their motions, but plainly it is not. Moreover, the principle of causational synonymy rules out that any homogenous mass, without an internal demarcation into components which move and are moved, could move itself (Physics 8.4, 255a5–18). This is so because, on the assumption that one part of a homogeneous body could move another part, the active component of change would be, in every aspect, indistinguishable from the part in which change is effected, and this in turn would mean that change would occur even though there would be no transmission of a causally relevant property from the active part to the passive. This implies that even though we may answer the question as to why the elements move to their natural places—the light bodies up and the heavy ones down—by an appeal to their respective natures as causes (“that it is simply their nature to move somewhere, and this is what it is to be light and to be heavy” Physics 8.4, 255b13–17), we do not thereby specify their moving causes. Their thrust being in a single direction, the elements cannot circumvent even rather simple obstacles they may encounter on their way (a sealed container can retain air under water, the roof stays put pressing down on the walls of a building etc.). Hence, whoever removes an obstacle to an element's motion is causally responsible for the ensuing elemental motions. But even such a causally responsible agent will not qualify as the moving cause, without yet further qualifications. For the identification of the moving cause of these locomotions Aristotle invokes his distinction of two potentialities. Some heavy material can be potentially light, as it can be transformed into a light material in a process of generation, whereas the emerging light material is still potential in a sense until it has acquired its full-fledged status, which involves its having arrived at that region of the cosmos which is its natural place. This analysis, then, describes the natural locomotion of the elements as a possibly postponed, completing stage within a single overarching process, and hence in these cases Aristotle can identify the cause of the second stage of the process with the efficient cause of the first stage, the entity which generated the element in the first place (Physics 8.4, 256a1).

Once it is established that there is a mover for each change, the finite causal chains[[38](http://plato.stanford.edu/entries/aristotle-natphil/notes.html" \l "38)] can be followed up to the primary instance of motion, the celestial revolutions, the Sun's motion along the ecliptic course responsible for many sublunar changes, the rotating seasons being foremost among them. Whether the cosmos has unmoved or moved movers, moreover, whether the universe is causally closed or needs some continuous external causal influence for its preservation, depends ultimately, then, on the status of the celestial motions.

Revolutions in the celestial realm are the natural motions of the special element making up the celestial spheres. This, however, does not entail that they have no need of an external unmoved[[39](http://plato.stanford.edu/entries/aristotle-natphil/notes.html" \l "39)] mover: the motions of the sublunary elements also occur under the influence of a moving cause. Nevertheless, the celestial bodies cannot be moved by an external mover of the same sort as the sublunary elements. These celestial bodies are eternal and ungenerated. Consequently, Aristotle cannot appeal to the entity which produced them as responsible for their locomotions. As they do not encounter any hindrance during their revolutions, there is no room for an accidental mover which would remove any obstacles in their way. Nevertheless, as celestial revolutions are motions, albeit eternal ones, they include some component of potentiality, which is actualised in the motion, and hence this potential component is in need of an actuality as a mover. This requirement implies that whatever can be the mover of these eternal motions needs to be in actuality without any restrictions (Metaphysics 12.6).[[40](http://plato.stanford.edu/entries/aristotle-natphil/notes.html" \l "40)] Moreover, such an entity has to possess an infinite power[[41](http://plato.stanford.edu/entries/aristotle-natphil/notes.html" \l "41)] which it communicates to the moved celestial sphere. Hence, this entity cannot be divisible and cannot have extension (Physics 8.10).

All this testifies to the exceptional status of the first movement, and behind it, of the first mover in the universe. The mover of these spheres possesses nothing but actuality, but this actuality is not what is transmitted in the process of causation. As we have seen in [Section 3](http://plato.stanford.edu/entries/aristotle-natphil/#3) above, this would not be exceptional as such: locomotion need not be caused on the transmission model of causation. But locomotions caused without immediate transmission were understood to be be embedded in larger patterns of causation which observed the principle of causational synonymy, and it is exactly such a larger pattern of causation which is missing in the case of celestial motions. Instead, what we hear in Metaphysics 12.6 is that the first mover moves as an object of love and striving,[[42](http://plato.stanford.edu/entries/aristotle-natphil/notes.html" \l "42)] which comes perilously close to abandoning the claims of Physicsbk. 8 to the effect that there is an unmoved mover serving as the efficient cause of the motions of the cosmos. Such doubts, however, should be dismissed. Aristotle is describing here in the terminology of his physics a supra-physical entity without which the universe could not function or persist. Small wonder if its mode of operation needs to subsume several different dimensions of physical causation.

## Glossary of Aristotelian terms

* action: poiein
* actuality: energeia or entelecheia
* art, craft: technê
* capacity: dunamis
* cause: aitia or aition
* change: kinêsis or metabolê   
  to effect change or motion: kinein   
  to undergo change or motion: kineisthai   
    qualitative change: alloiôsis   
    quantitative changes—growth: auxêsis; shrinking: phthisis   
    locomotion: phora
* to come to be: gignesthai
* coming to be: genesis
* force: bia   
    forced: biâi
* form: eidos or morphê
* in so far as: hêi
* genus, kind: genos
* goal: telos
* kind, species: eidos
* matter: hulê
* magnitude: megethos
* motion: kinêsis
* nature: phusis   
  natural: phusikos, phusei   
    according to nature: kata phusin   
    contrary to nature: para phusin
* passion: paschein
* to perish: phtheirein
* perishing: phthora
* place: pou (as one of the categories, literally: where) or topos
* potentiality: dunamis
* power: dunamis
* quality: poion
* quantity: poson
* substance: ousia
* time: pote (as one of the categories, literally: when) or chronos

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* [Let's Get Physical: Aristotle's Natural Philosophy](http://www.historyofphilosophy.net/aristotle-physics/), a podcast by Peter Adamson (Philosophy, Kings College London).
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